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i2 SUMMIT

EVEN AFTER PERCUTANEOUS CORONARY INTERVENTION OF ANGIOGRAPHICALLY SIGNIFICANT LESIONS, IVUS-DEFINED HIGH-GRADE STENOSES ARE COMMON. A BASELINE IVUS ANALYSIS FROM THE PROSPECT TRIAL

i2 Poster Contributions
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PROSPECT (Providing Regional Observations to Study Predictors of Events in the Coronary Tree) was a multicenter, multimodality imaging study designed to prospectively identify vulnerable plaque after treatment of all culprit lesions in pts presenting with acute coronary syndromes. The protocol specified that all 3 coronary arteries - both culprit and non-culprit lesion containing vessels - be studied with angiography and intravascular ultrasound (IVUS) after successful PCI, including imaging of the proximal 6-8cm of each major epicardial artery with IVUS. Of 615 pts with analyzable IVUS, the average number of imaged vessels was 2.84±0.50 per pt, the average number of analyzable vessels was 2.57±0.64, and the average length of analyzable arteries measured 193±82mm. An IVUS lesion was defined as a plaque burden (plaque/vessel area) >40% in 3 consecutive frames (~1.5 mm in length).

Results: 30.3% of pts presented with STEMI, 65.6% of pts presented with NSTEMI, and 4.4% with unstable angina and ECG changes. After treating all angiographically significant culprit lesions (72% of pts had culprit lesions in 1 artery, and 28% had culprit lesions in 2 arteries), IVUS identified 2698 residual lesions (mean 4.5±2.1 lesions per pt). Among these, there were 512 lesions (mean 0.83±1.08 per pt or at ≥1 such lesion in 42.2% of pts) that had an IVUS minimum lumen area (MLA) <4.0mm2, a commonly used and ischemia-validated criterion for a significant stenosis. Importantly, among IVUS lesions with an MLA <4.0mm2, an angiographic diameter stenosis >50% was seen in only 2%. Finally, among 846 lesions detected by both angiography (visual diameter stenosis >30%) and IVUS, 251 angiographic lesions (29.7%) had an IVUS MLA <4.0mm2 while 259 angiographic lesions (33.0%) had insufficient plaque to reach the criteria for an IVUS lesion (<40% plaque burden or <3 frames).

Conclusions: Even after treating all culprit lesions in pts with STEMI and NSTEMI, IVUS identified angiographically silent, but potentially clinically important stenoses in ≈40% of pts. Conversely, many suspected angiographic lesions did not have even modest plaque burden detected by IVUS.